

B.Pharm I Year I Semester (R19) Supplementary Examinations September 2022

PHARMACEUTICAL ANALYSIS

(For 2019, 2020 & 2021 admitted batches only)

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- | | |
|---|----|
| (a) Define polarography. | 2M |
| (b) What is Nernst equation? | 2M |
| (c) Define equivalence conductivity. | 2M |
| (d) Define oxidation and give some examples of oxidizing and reducing agents. | 2M |
| (e) Define supersaturation. | 2M |
| (f) What do you mean by chelation? | 2M |
| (g) Define precipitation titration. | 2M |
| (h) What are protophilic solvents? | 2M |
| (i) Explain in briefly about Bronsted-Lowry concept. | 2M |
| (j) What do you understand by accuracy and precision? | 2M |

PART – B

(Answer any two questions: 02 X 10 = 20 Marks)

- | | |
|--|----|
| 2 (a) Discuss the preparation and standardization of sulphuric acid. | 5M |
| (b) Explain theory involved in acid base titrations. | 5M |
| 3 (a) Explain basic principle and methods involved in diazotization titration. | 5M |
| (b) Briefly discuss conductometric titrations and its applications. | 5M |
| 4 (a) Give a note on concepts of oxidation and reduction. | 5M |
| (b) Explain methods to determine end point of potentiometric titration and applications. | 5M |

PART – C

(Answer any seven questions: 07 X 05 = 35 Marks)

- | | |
|---|------|
| 5 (a) Explain the methods of expressing concentration. | 2.5M |
| (b) Explain about sources of errors. | 2.5M |
| 6 (a) Illustrate about preparation and standardization of hydrochloric acid. | 2.5M |
| (b) Explain procedure involved in estimation of Ephedrine HCl. | 2.5M |
| 7 (a) Give a detailed note on neutralization curves. | 2.5M |
| (b) Explain about Fajan's method. | 2.5M |
| 8 (a) Briefly explain the procedure involved in estimation of magnesium sulphate. | 2.5M |
| (b) Outline the procedure for estimation of barium sulphate. | 2.5M |

Contd. in page 2

- 9 (a) Define diazotization and give some applications of diazotization titration. 2.5M
(b) Write the principle and procedure involved in redox titration. 2.5M
- 10 (a) Explain in detail about cerimetry. 2.5M
(b) Draw the diagram conductometer and applications of conductometry. 2.5M
- 11 (a) Explain construction and working of silver chloride electrode. 2.5M
(b) Write the principle of polarography and a note on Ilkovic equation. 2.5M
- 12 (a) Explain the concept & discuss the different types of solvents used in non-aqueous titrations. 2.5M
(b) Illustrate procedure involved in titration of potassium iodide. 2.5M
- 13 (a) Explain construction and working dropping mercury electrode. 2.5M
(b) Explain about sources of impurities in medicinal agents. 2.5M

B.Pharm I Year I Semester (R19) Regular Examinations July 2022

PHARMACEUTICAL ANALYSIS

(For 2021 admitted batches only)

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- | | |
|--|----|
| (a) Classify analytical methods (instrumental and non-instrumental). | 2M |
| (b) Define Lewis acid and base with example. | 2M |
| (c) Define adsorption indicator with example. | 2M |
| (d) Define specific conductance. | 2M |
| (e) Write a brief note on primary standards. | 2M |
| (f) Describe the principle involved in diazotization titrations. | 2M |
| (g) Give the limitations of argentometric titrations. | 2M |
| (h) Define migration current. | 2M |
| (i) What do you mean by e.m.f. | 2M |
| (j) Outline the examples of oxidizing and reducing agents. | 2M |

PART – B**(Answer any two questions: 02 X 10 = 20 Marks)**

- | | |
|---|----|
| 2 (a) Explain different types of errors with examples. | 5M |
| (b) Classify acid-base titrations with examples. Write in brief on neutralizing curves. | 5M |
| 3 (a) Explain in detail about Volhard's method and Mohr's method in precipitation titrations. | 5M |
| (b) Discuss in detail about potentiometric titrations, its principle and instrumentation. | 5M |
| 4 (a) Explain theory of redox titrations. | 5M |
| (b) What do you mean by coprecipitation and explain different types of coprecipitation? | 5M |

PART – C**(Answer any seven questions: 07 X 05 = 35 Marks)**

- | | |
|--|----|
| 5 Explain in detail about: | 5M |
| (a) Preparation and standardization of sodium hydroxide. | |
| (b) Sources of impurities in medicinal agents. | |
| 6 Give a note on: | 5M |
| (a) Theories of acid base titrations. | |
| (b) Different types of solvents in non-aqueous titration. | |
| 7 Briefly explain about: | 5M |
| (a) The procedure involved in estimation of sodium chloride. | |
| (b) The procedure involved in estimation of calcium gluconate by complexometric titration. | |

Contd. in page 2

- 8 Write short notes on: 5M
(a) Ostwald's ripening and give its significance in gravimetric analysis.
(b) Principle and procedure involved in iodometry and its applications.
- 9 Briefly discuss about: 5M
(a) The concept of oxidation and reduction.
(b) The principle and procedure involved in conductometric titration.
- 10 Describe in detail about: 5M
(a) Electrodes used in potentiometry.
(b) Principle and procedure involve in polarography.
- 11 Write a short note on: 5M
(a) The methods to determine end point of potentiometric titration and applications.
(b) Titration with potassium iodate.
- 12 Add a note on: 5M
(a) Masking and demasking reagents used in complexometric titrations.
(b) Preparation and standardization of potassium permanganate.
- 13 Write a detailed note on: 5M
(a) The methods of minimizing errors.
(b) Different techniques of analysis.

B.Pharm I Year I Semester (R19) Supplementary Examinations April/May 2022

PHARMACEUTICAL ANALYSIS

(For 2019 & 2020 admitted batches only)

Time: 3 hours

Max. Marks: 75

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define the terms molality and mole fraction.
 - Why sodium hydroxide is secondary standard?
 - Explain the acid base theory behind non-aqueous titrations.
 - Name the primary standard for sodium hydroxide, hydrochloric acid, perchloric acid, and sulphuric acid.
 - Why drying is an important step in gravimetry?
 - Name any four drugs assayed by diazotization titration.
 - Define the term reduction with an example.
 - What is redox potential? Write its use.
 - Name the indicator and reference electrodes for acid base and redox titrations.
 - What is cell constant how it is determined?

PART – B
(Answer any two questions: 02 X 10 = 20 Marks)

- 2
- Explain the sources of impurities in the active pharmaceutical ingredients.
 - Classify primary standards with at least two examples for each class.
- 3
- Explain the resonance theory to explain the behaviour of acid base indicators.
 - Explain the preparation and standardization of 500 ml of 0.1M perchloric acid.
- 4
- Explain the steps in gravimetry in brief.
 - List the ideal requirements and mechanism of action of metal ion indicators.

PART – C
(Answer any seven questions: 07 X 05 = 35 Marks)

- 5 Classify volumetric methods of analysis. Add a brief note to each class.
- 6 Explain the preparation 250 ml of 0.05M potassium permanganate and 500 ml of 0.1N hydrochloric acid as IP.
- 7 Explain Arrhenius theory and Lewis concept of acid bases.
- 8 Write and explain the ilkovic equation. Write its use.
- 9 Explain the preparation and standardization of 0.05M disodium edetate as per I P.
- 10 Explain the reasons for modifications and modifications made in Volhard's method for the estimation of halides.
- 11 List the applications of ceric ammonium sulphate titrations.
- 12 Explain the principle in the assay of vitamin C by iodometry and copper sulphate by iodometry.
- 13 Explain the working of glass electrode with a neat labelled diagram.

B.Pharm I Year I Semester (R19) Regular & Supplementary Examinations August/September 2021
PHARMACEUTICAL ANALYSIS

Time: 3 hours

Max. Marks: 75

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define accuracy and precision.
 - What is monograph?
 - Define indicator.
 - Give the pH range of methyl orange and methyl red.
 - Define masking.
 - Define post precipitation.
 - Define oxidation & reduction.
 - Differentiate between iodometry and iodimetry.
 - Define reference electrode with example.
 - Write the reactions involved in standardization of potassium permanganate.

PART – B
(Answer any two questions: 02 X 10 = 20 Marks)

- 2
- Define primary standard substance with examples. Write the ideal properties of the same.
 - Explain the various methods to minimize the errors.
- 3
- Describe the different types of complexometric titrations.
 - Write the principle and reactions involved in the assay of sodium benzoate.
- 4
- Describe the construction and working of glass electrode.
 - Explain the various steps involved in gravimetry.

PART – C
(Answer any seven questions: 07 X 05 = 35 Marks)

- 5
- Write about molarity.
 - Write about normality.
- 6
- Write the procedure for the standardization of approximately 0.5N HCl.
 - Write about adsorption indicators.
- 7
- What is diazotization reaction? Give example.
- 8
- Enlist the solvents used in nonaqueous titrations.
 - Write the ideal properties of precipitate in gravimetry.
- 9
- Write the reactions involved in bromometry.
 - Write the applications potentiometry.
- 10
- Explain the modified Volhard's method.
 - Write Nernst's equation with notations.
- 11
- Calculate the normality of sulphuric acid whose strength is 1.225 gm per 100 ml.
 - Explain the errors of methods with examples.
- 12
- Explain the leveling effect with example.
- 13
- Explain the factors affecting conductance.

B.Pharm I Year I Semester (R19) Supplementary Examinations March 2021

PHARMACEUTICAL ANALYSIS

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- List out the examples for the primary & secondary standards.
 - List out the different techniques of analysis.
 - Write the principle of acidimetry.
 - Classify acid base titrations.
 - Write a note on Volhard's method.
 - Write a note on masking agents.
 - Write the examples for iodometry.
 - Write the principle of redox titration.
 - Draw the polarographic wave with the indications.
 - Define conductance & resistance.

PART – B**(Answer any two questions: 02 X 10 = 20 Marks)**

- 2
- Enumerate the sources of impurities in medicinal agents.
 - Write a note on neutralization curves.
- 3
- Write a detailed note on modified Volhard's & Mohr's method.
 - Write the principle & methods & applications of diazotization titrations.
- 4
- Write the principle & applications of cerimetry.
 - Describe in detail about various conductometric titrations.

PART – C**(Answer any seven questions: 07 X 05 = 35 Marks)**

- 5
- Describe the terms limiting current & residual current.
 - Write the advantages of dropping mercury electrode.
- 6
- Write the principle involved in limit test for chlorides.
 - Write the principle involved in limit test for iron.
- 7
- Write the principle involved in iodometry.
 - Explain the concept of oxidation & reduction.
- 8
- Explain the construction of glass electrode.
 - Explain the construction of calomel electrode.

Contd. in page 2

- 9 (a) Write a note on apparatus used in conductometric titration.
(b) Write a note on metal electrodes.
- 10 (a) Write the principle involved in estimation of magnesium sulphate.
(b) Write the principle involved in estimation of Ephedrine HCl.
- 11 (a) Write the principle involved in estimation of barium sulphate.
(b) Write a note on Indian pharmacopoeia.
- 12 (a) Write methods of minimizing errors.
(b) Write the principle involved in non-aqueous titrations.
- 13 (a) Write a note on co-precipitation.
(b) Write the construction of silver chloride electrode.

B.Pharm I Year I Semester (R19) Supplementary Examinations October 2020

PHARMACEUTICAL ANALYSIS

Time: 3 hours

Max. Marks: 75

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define the term 'Accuracy' and 'Precision'.
 - Define the term 'Titrant' and 'Titrand'.
 - What are the points that should be considered at the time of choosing a suitable indicator for an acid-base reaction?
 - Define the leveling effect.
 - Define the masking phenomenon.
 - Differentiate between Mohr's method and Volhard's method.
 - Give the oxidation number of sulfur in: (i) SO_2 . (ii) Na_2SO_3 .
 - Why the starch solution is added near the endpoint in the assay of iodine?
 - Give the definition of: (i) Conductance. (ii) Specific conductance.
 - Why nitrogen gas is passed through the solution before obtaining a polarogram of any solution?

PART – B**(Answer any two questions: 02 X 10 = 20 Marks)**

- 2
- Write about the primary standard. Discuss the basic characteristics of primary standards.
 - Write a note on Lewis concept of acid and base. Discuss the role of common ion effect and pH with respect to solubility.
- 3
- Discuss the basic principle of precipitation titration and explain various factors affecting the solubility of the precipitate.
 - Describe the concept of oxidation and reduction. What is the basis of redox titration?
- 4
- What is the indicator electrode? Name four indicator electrodes and explain the working of any one electrode out of them.
 - Write a note on Ostwald theory of indicator. Discuss mixed indicators.

PART – C**(Answer any seven questions: 07 X 05 = 35 Marks)**

- 5 How a primary standard solution is prepared? How is it different from a secondary solution?
- 6
- Give the pharmaceutical application of non-aqueous titration.
 - Explain in short the assay procedure for the estimation of Ephedrine HCl.
- 7
- How gravimetric analysis is different from volumetric analysis? Give its advantages over other methods of analysis.
 - Discuss in short various end point detection techniques in diazotization titration.

Contd. in page 2

- 8 Distinguish between iodometric and iodimetric titrations. Explain the importance of pH conditions for each of them.
- 9 (a) In what respect potentiometric titration differ from conductometric titration. Discuss the pharmaceutical application of potentiometry
(b) Describe the Ilkovic equation. What are its consequences?
- 10 (a) Enumerate various methods of endpoint detection in complexometry.
(b) Write Dropping Mercury Electrode. What are its advantages?
- 11 Give a detailed account of the Oxidation-reduction curve.
- 12 (a) Write a comprehensive note on the application of conductometric titration.
(b) Distinguish between co-precipitation and post-precipitation.
- 13 (a) Define impurity and discuss various sources of impurity.
(b) Give the definition of: (i) Conductance. (ii) Equivalent conductance.

B.Pharm I Year I Semester (R19) Regular Examinations February 2020
PHARMACEUTICAL ANALYSIS

Time: 3 hours

Max. Marks: 75

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define the term 'Reproducibility' and 'Repeatability'.
 - Define significant figures.
 - Define buffer capacity.
 - Give the name of indicators used in non-aqueous titration.
 - Distinguish between co-precipitation and post-precipitation.
 - Give the names of indicators used in Fajan's method.
 - Give the oxidation number of sulfur in: (i) SO_3 . (ii) H_2SO_4 .
 - Why potassium iodide is added in the assay of iodine?
 - Give the definition of: (i) Conductance. (ii) Equivalent conductance.
 - Why supporting electrodes are used in polarography?

PART – B
(Answer any two questions: 02 X 10 = 20 Marks)

- Discuss the method of preparation and standardization of 1M NaOH.
 - What do you mean by limit test? Discuss in brief the limit test of iron and lead.
- Give the principle of neutralization titration. What is an indicator range? Briefly state the important theory of acid-base indicator.
 - Define precipitation. Enlist different methods of precipitation titration and explain Mohr's method in detail.
- Give the theory of redox titration. Discuss various indicators used in redox titration and add a note on permanganate titration.
 - Describe potentiometric titration assembly with a well-labeled diagram. Briefly enumerate its working.

PART – C
(Answer any seven questions: 07 X 05 = 35 Marks)

- Define primary standards with suitable examples.
- State the law of mass action, derive the equation and write its application.
- Explain Modified Volhard's method for precipitation titration.
- Discuss the oxidation number method for calculating the equivalent of redox substance with two examples.
- Describe Dropping Mercury electrode. What are its limitations?
- Define the construction of: (i) Calomel electrode. (ii) Silver- Silver chloride electrode.
- Describe non-aqueous titration and the solvents used in this titration.
- Write a detailed note on cerimetry.
- How gravimetric analysis is different from volumetric analysis? Give its advantages over other methods of analysis.
